INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 3 ISSUE 4 (2017) PAGES 2260 – 2265
RECEIVED : 05.07.2017 PUBLISHED : 06.08.2017
Aug 06, 2017

TO BRIDGE THIS GAP BETWEEN INTEGRATION OF CLOUD COMPUTING AND INTERNET OF THINGS (CLOUDIOT)

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ABSTRACT

Internet of things (IOT) is an abstract idea that visualizes all objects that present around us as the part of internet. IOT scope is very wide and includes sensing, communicating and networking of devices deployed that has potential to grow on large scale in future. In this work we focus our attention on the integration of Cloud and IoT, which we call the Cloud IoT paradigm. Many works in literature have surveyed Cloud and IoT separately: their main properties, features, underlying technologies, and open issues. However, to the best of our knowledge, these works lack a detailed analysis of the Cloud IoT paradigm. As processing, storage, and communication capabilities of individual IOT device are limited, the assistance from the current cloud computing technology will help to release the burden, reduce the energy consumption, and prolong battery life.

Keywords: IOT, Paradigm, Potential.

1. INTRODUCTION

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT is simply the network of interconnected things/devices which are embedded with sensors, software, network connectivity and necessary electronics that enables them to collect and exchange data making them responsive. More than a concept Internet of Things is essentially an architectural framework which allows integration and data exchange between the physical world and computer systems over existing network infrastructure. Though the term Internet of Things is 16 years old, the actual idea of connected devices had been around longer, at least since the 70s. Earlier, the idea was often called “embedded internet” or “pervasive computing”. But the actual term “Internet of Things” was coined by Kevin Ashton in 1999 during his work at Procter & Gamble. Ashton who was working in supply chain optimization, wanted to attract senior management’s attention to a new exciting technology called RFID. Because the internet was the hottest new trend in 1999, he called his presentation “Internet of Things”

Some of the milestones in the evolution of the mashing of the physical with the digital In January 13, 1946, the 2-Way Wrist Radio, worn as a wristwatch by Dick Tracy and members of the police force, makes its first appearance and becomes one of the comic strip’s most recognizable icons. In 1949, the bar code is conceived when 27-year-olds Norman Joseph Woodland draws four lines in the sand on a Miami beach. Woodland, who later became an IBM engineer, received the first patent for a linear bar code in 1952. More than twenty years later, another IBMer, George Laurer, was one of those primarily responsible for refining the idea for use by supermarkets.

2. REFERENCE MODEL

The IoT Reference Model starts with Level 1: physical devices and controllers that might control multiple devices. These are the "things" in the IoT, and they include a wide range of endpoint devices that send and receive information. Devices are diverse, and there are no rules about size, location, form factor, or origin. Some devices will be the size of a silicon chip. Some will be as large as vehicles. The IoT must support the entire range. Dozens or hundreds of equipment manufacturers will produce IoT devices.

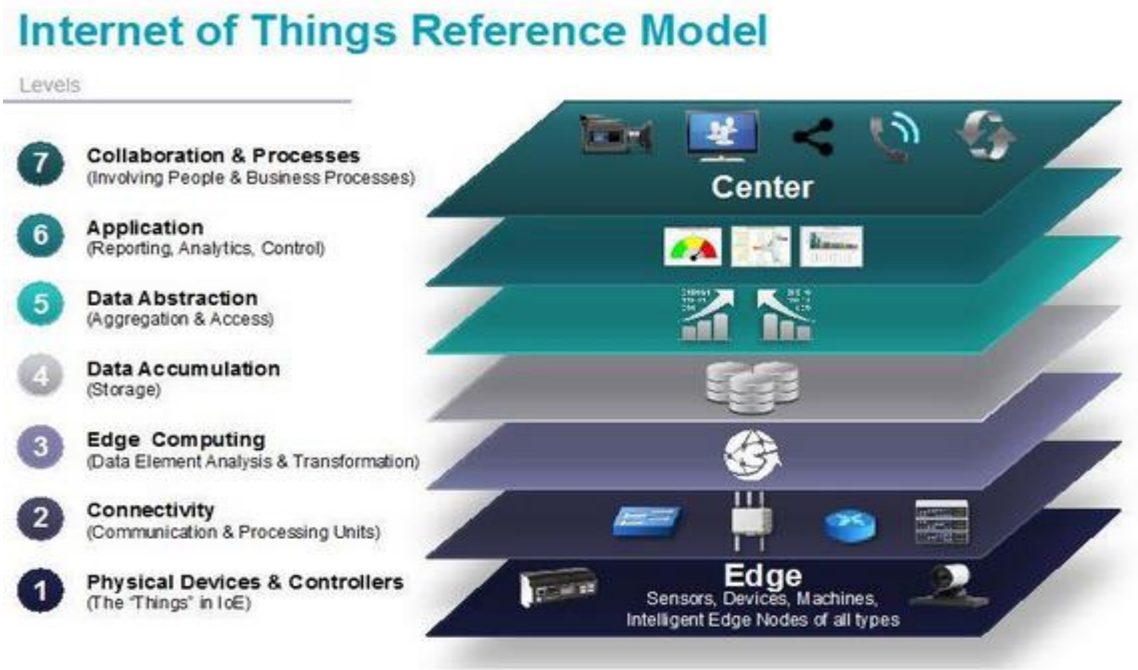

Fig.1.IOT Reference Mode

The IoT system, and the information it creates, is of little value unless it yields action, which often requires people and processes. Applications execute business logic to empower people. People use applications and associated data for their specific needs. Often, multiple people use the same application for a range of different purposes. So the objective is not the applicationit is to empower people to do their work better. Applications (Level 6) give business people the right data, at the right time, so they can do the right thing. But frequently, the action needed requires more than one person. People must be able to communicate and collaborate, sometimes using the traditional Internet, to make the IoT useful. Communication and collaboration often requires multiple steps. And it usually transcends multiple applications.

3. CLOUD COMPUTING CHALLENGES

As massive networks of systems come online, these systems need to communicate with each other and with the enterprise, often over vast distances. Both the systems and the communications need to be secure, or millions of dollars' worth of assets are put at risk. One of the most prevalent examples of the need for security is the smart grid, which is on the leading edge of the IoT. As information on the grid becomes more accessible, so does the damage a security breach can inflict. Early adopters of Internet of Things products and technologies in business environments have started to discover that the scale challenges are very real. As a result, their IoT deployments are moving at a much slower pace than they originally hoped. In fact, many organizations are still in the POC (proof of concept) stage for IoT, even after several years of trying. Given all the hype and discussion around enterprise IoT, this is proving to be very frustrating for both end customers and the many technology companies and solution partners selling IoT-related products and services. In addition to the operational and financial challenges associated with IoT, the need for highly specialized and highly customized solutions makes IoT difficult to scale. , to manage complex events , and to implement task offloading for energy saving Communication resources. One of the requirements of IoT is to make IP-enabled devices communicate through dedicated hardware, and the support for such communication can be very expensive. Cloud offers an effective and cheap solution to connect, track, and manage anything from anywhere at any time using customized portals and built-in apps . Thanks to the availability of high speed networks, it enables the monitoring and control of remote things their coordination their communications, and the real-time access to the produced data.

4. APPLICATIONS

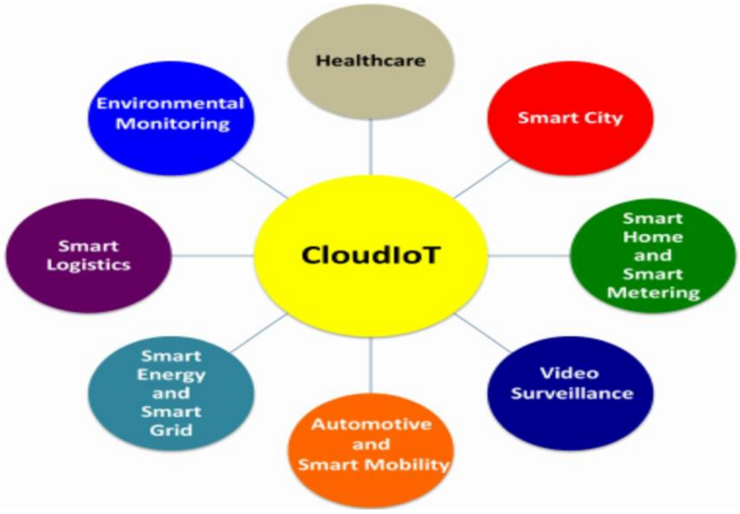

Fig.2. Cloud IOT

We describe a wide set of applications that are made possible or significantly improved thanks to the CloudIoT paradigm. For each application we point out the challenges. IoT and multimedia technologies have made their entrance in the healthcare field thanks to ambient-assisted living and telemedicine .

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Smart devices, mobile Internet, and Cloud services contribute to the continuous and systematic innovation of Healthcare and enable cost effective, efficient, timely, and high-quality ubiquitous medical services . Pervasive healthcare applications generate a vast amount of sensor data that have to be managed properly for further analysis and processing . The adoption of Cloud in this scenario leads to the abstraction of technical details, eliminating the need for expertise in, or control over, the technology infrastructure, and it represents a promising solution for managing healthcare sensor data efficiently. It further makes mobile devices suited for health information delivery, access and communication, also on the go, enhancing medical data security, availability, and redundancy. Moreover, it enables the execution (in the Cloud) of secure multimedia-based health services, overcoming the issue of running heavy multimedia & security algorithms on devices with limited computational capacity and small batteries. In this field, common issues related to management, technology, security, and law have been investigated: interoperability, system security, streaming Quality of Service (QoS), and dynamically increasing storage are commonly considered obstacles.

5. ANALYSIS

Almost four out of five individuals (78 %) in the EU used the internet at least once in the three months prior to the survey. The Digital Agenda target of 75 % of the population using the internet regularly in 2015 (on average at least once a week, at home, at work or elsewhere) was reached in 2014.

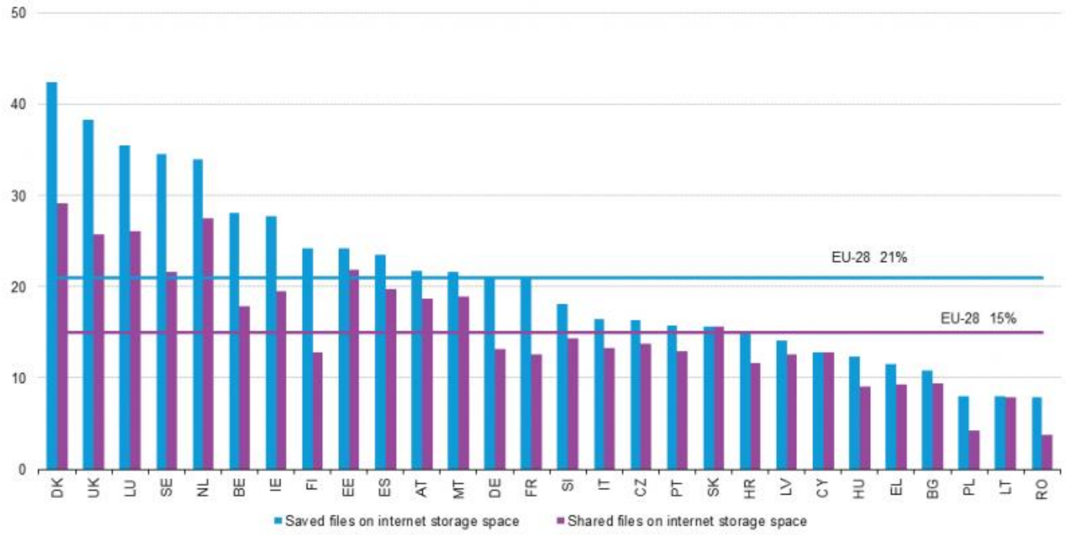

Fig.3. Use of Internet Storage Space

The proportion of internet users who go online on a daily basis was high in all Member States and in Iceland, Norway and Switzerland. Just under two thirds of all EU citizens (65 %) used the internet every day or almost every day. Services based on cloud computing technology allow users to store large files or use software on a server run over the internet. Cloud services are a relatively new phenomenon compared with web applications for social networking, listening to music or watching films. One of the main challenges faced when measuring the usage of cloud services is being able to make a clear distinction between these and other online services. The following indicators therefore focus on the use of cloud services for file storage and sharing, provide information on type of content stored or shared on a server accessible over the internet, use of paid-for and free services and the reasons for using or not using cloud services. Photos were the most popular type of file for storing or sharing via cloud services. Among those who used internet storage space, 82 % saved or shared photos whilst 54 % reported saving or sharing text documents, spreadsheets or electronic presentations. Around a third of EU cloud users saved or shared music, a quarter video files and one in seven e-books. Individuals were asked about the last time they used the internet, how often they used the internet, use away from home or usual place of work, e-skills, e-government and e-commerce related activities and use of a wide range of online services fulfilling different functions, e.g. communication, access to information and entertainment. The 2014 survey included a specific module with questions on the use of cloud computing services for private purposes by individuals. It provides information about the current trends in moving from using own hardware and software to using resources provided by a cloud service.

CONCLUSION

The main reference period for data relating to activities carried out over the internet and the use of cloud services was the first quarter of 2014, as most countries collected data in the second quarter. A 12-month reference period was taken for e-government and e-commerce related activities because they tend to be irregular and seasonal.The ‘digital divide’ refers to the divergence in the patterns of computer and internet use seen across countries and between different sections of the population. 'Cloud services' use cloud computing technology and offer internet storage space for saving, sharing or editing text documents, spreadsheets, presentations, photos, e-books and e-magazines, music and video.

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